RS-8505-00

IL-0408-16

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A PROPOSAL TO MODIFY

GROUNDWATER QUALITY ASSESSMENT PROGRAM

AT

CABOT CORPORATION PLANT, TUSCOLA, ILLINOIS

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Cabot Corporation proposes the following modifications in the Groundwater Quality Assessment Program which was submitted to the Agency in February 1984.

Monitoring System

Presently, the monitoring system at the Cabot Corporation plant, Tuscola, Illinois consists of seven shallow and two relatively deep monitoring wells. Based on the quarterly groundwater assessments of the regional flow direction and well depths in conjunction with chemical analysis, it appears that the existing monitoring system needs to be expanded to determine vertical and horizontal extent of the contamination. Thus, Cabot Corporation proposes the addition of one 75-ft, two 50-ft (one will replace G113) and two 20-ft wells to the existing monitoring system. Number and approximate locations of the proposed wells are shown in the attached map.

1. Vertical Extent

   G114 will be located just east of G106 and drilled to 75 ft. A 50-ft well, G118, will be installed next to G111; this well will replace G113. Another 50-ft well, G117, will be drilled next to G116.

2. Horizontal Extent

Two shallow wells (G115 and G116), approximately 20 ft deep, will be located along the southeast fence line.

All the proposed wells will be constructed assentially similar to the wells, G109, G110, G111, G112 and G113 which were installed in April 1984. However, their depths and screen intervals would be different. The proposed monitoring wells will be drilled with a hollow stem auger. Machine-slotted teflon screen and casing of 2-inch diameter will be installed in the wells. Flush threaded casing and screens will be used to avoid potential sample contamination by any cleaner and glue. After backfilling the screened interval with clean sand, the wells will be developed using a surge block. Movement of the surge block in the well will agitate water, and loosen and remove silt and clay from the sand pack. The annulus will then be filled to the three ft below the land surface with cement/bentonite grout and a lockable steel cover will be set in three ft concrete around the teflon casing to provide well protection.

G114 will be drilled to a depth of 75 ft. A 5-ft screen will be placed at the 70 to 75 ft and a 70 to 75 ft riser pipe installed above the screen in the well so that water would be sampled from only 70 to 75 ft depth interval. G115 and G116 will be located along the fence line which is present east and southeast of the plant. These wells will be drilled to an approximate depth of

20 ft. A 10-ft long screen and 10 to 15 ft riser pipes will be installed in these wells. G117 and G118 will be drilled to a depth of 50 ft. A 5-ft screen will be placed between 45 and 50 ft and a 45 to 50 ft riser pipe (blank casing) will be installed above the screen in each well.

When these wells are installed, there will be 18 monitoring wells at the plant. Of the 18 wells, 13 wells (G101, G106, G107, G108, G109, G110, G111, G112, G114, G115, G116, G117 and G118) will make up the monitoring system for sampling at the plant; the remaining wells (G102, G103, G104, G105 and G113) will not be sampled but kept operational.

It is expected that the proposed five wells will be installed before the April 1985 quarterly sampling.

Frequency of Sampling and Parameters to be Analyzed

Based on the analyses of both the groundwater samples from the monitoring wells and waste fluid sample from the impoundment, the IEPA had approved the list containing four hazardous waste constituents to be analyzed in the water samples taken from the monitoring wells at the Cabot Corporation plant. The approval was granted in May 1984. Subsequent to this, the analyses made for two quarterly and one annual assessments indicated a total of nine additional parameters above their respective detection

limits in groundwater. Of the nine, two parameters were measurable in the three assessments, four parameters in two, and three parameters in one. The eight parameters out of nine are listed by the IPCB under the "Hazardous Waste Constituents" list. Based on the above, Cabot Corporation proposes to modify "Frequency of Sampling and Parameters to be Analyzed" and "Monitoring System" which was submitted to the IEPA on May 5, 1984, as below.

A. Thirteen wells in the monitoring system will be sampled annually and the samples will be analyzed for the Groundwater Quality Parameters (Section 725.192 (b) (2)) pH and specific conductance of the Indicator Parameters of Groundwater Contamination (Section 725.192 (b) (3)), and any hazardous waste constituent (Table 2R).

B. All wells in the monitoring system, except G106, G107 and G108, will be sampled quarterly and the samples will be analyzed for hazardous waste constituents, pH and specific conductance, and the analysis results above detection limits will be reported (Table 2R). Furthermore, if any compounds of volatile organics, base/neutral extractables, acid extractables, and pesticides and PCB's are found to be above their respective detection limits, they will be reported quarterly to the IEPA.

C. To increase reliability of the analyses, blank samples will

be sent to the laboratory along with the collected groundwater samples.

D. The detection limits and method number will be indicated for the parameters reported.

E. As it was decided in the Agency-Cabot Corporation meeting of February 11, 1985, nondedicated silicone tubing in a peristaltic pump will be used in groundwater sampling. However, all dedicated down-hole polyethylene tubing at each well will be changed to teflon tubing.

F. Following each well sampling, pump tubing is flushed with approximately one liter of reagent grade methanol and three liters of deionized water. Fresh aliquots of methanol and water are transferred to disposable beakers prior to rinsing of potentially contaminated tubing. Further flushing of the tubing is achieved through a 15-45 minute well evacuation prior to sample collection.

Following each well sampling, all surfaces of the bailer are washed with reagent grade methanol and deionized water.

G. Water removed from the monitoring wells prior to the actual groundwater sampling and the produced rinse water in the above item F will be collected in a container which will be emptied into the RCRA impoundment for deep well disposal.

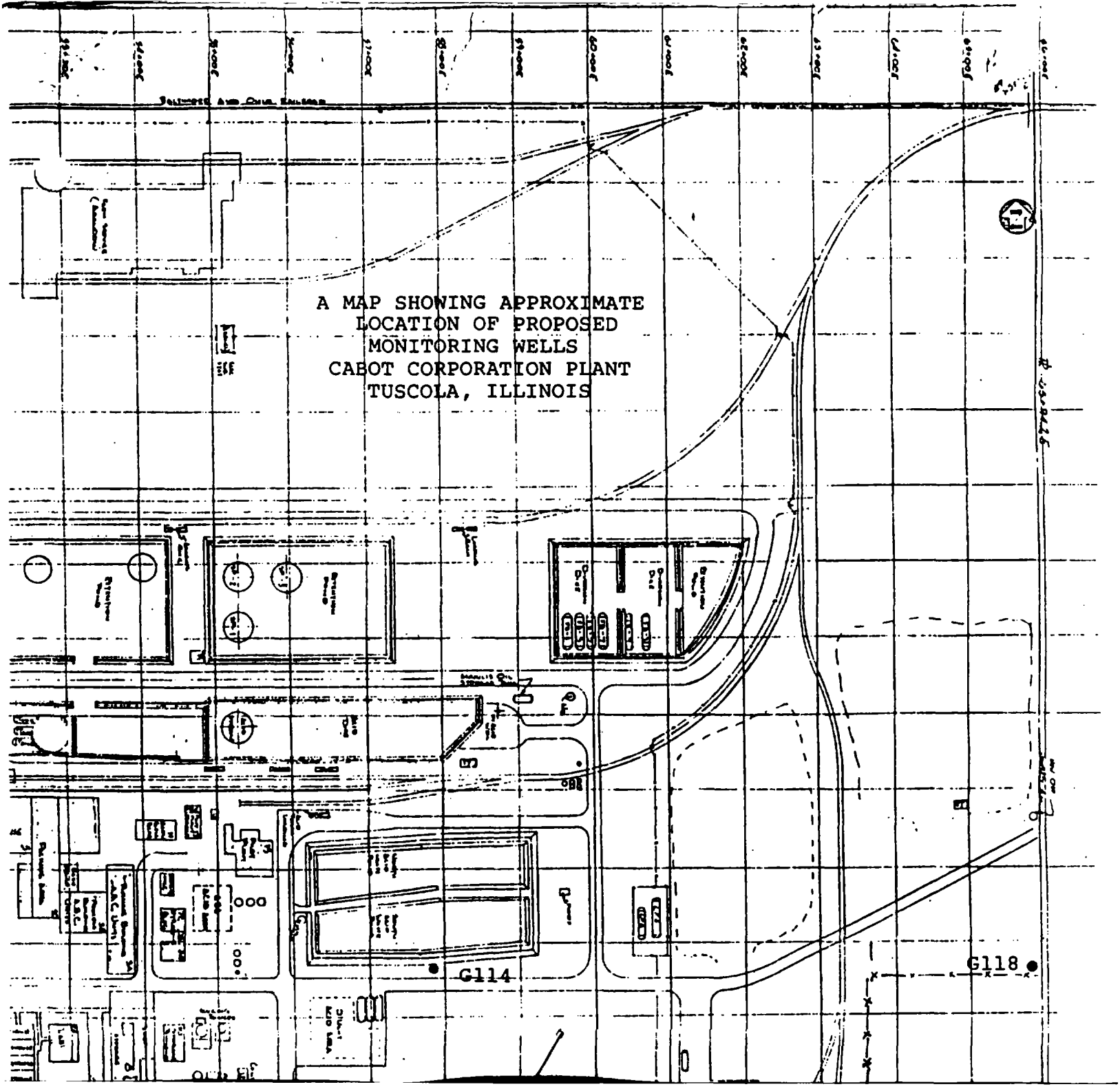
Table 2R. Paremeters to be analyzed, sample containers, preservation procedures, and frequency of sampling

PARAMETER	CONTAINER	PRESERVATIVE	HOLDING TIME	FREQUENCY OF SAMPLING
WATER QUALITY				
Chloride	P,G*	Cool, 4° C	7 days	Annually
Iron	P,G	HNO^3 to pH< 2	6 months	Annually
Manganese	P,G	HNO^3 to pH< 2	6 months	Annually
Phenols	G	H^2SO_4 to pH< 2	24 hours	Annually
Sodium	P,G	HNO^3 to pH< 2	6 months	Annually
Sulfate	P,G	Cool, 4° C	7 days	Annually
CONTAMINATION INDICATORS				
pH	P,G	Det.on site Cool, 4° C	6 hours	Quarterly
Specific Conductance	P,G	Cool, 4° C	24 hours	Quarterly
**HAZARDOUS WASTE CONSTITUENTS	G	Cool, 4° C		
Bis (2-Ethyl-Hexyl) phthalate				Quarterly
Carbon tetrachloride				Quarterly
Methylene chloride				Quarterly
Tetrachloroethylene				Quarterly
Benzene				Quarterly
Toluene				Quarterly
Chloroform				Quarterly
Ethylbenzene				Quarterly
Di n octyl phthalate				Quarterly
Butyl benzyl phthalate				Quarterly

* P,G Plastic or Glass

** Any hazardous waste constituents identified above its detection limit will be reported.

Note: All 13 wells in the monitoring system will be sampled annually. All, except three wells (G106, G107, and G108) will be sampled quarterly.


A MAP SHOWING APPROXIMATE
LOCATION OF PROPOSED
MONITORING WELLS
CABOT CORPORATION PLANT
TUSCOLA, ILLINOIS
G114
G118